PATENT APPLICATION

ATTORNEY DOCKET NO. __10006286-1__

OIPE

NOV 1 3 2003

**IN THE
UNITED STATES PATENT AND TRADEMARK OFFICE**

Inventor(s): Ullas GARGI et al

Application No.: 09/904,627

Filing Date: July 16, 2001

Title: Hierarchical Image Feature-Based Visualization

Confirmation No.: 2970

Examiner: Jin Cheng Wang

Group Art Unit: 2672

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Technology Center 2600

Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

TRANSMITTAL LETTER FOR RESPONSE/AMENDMENT

Sir:

Transmitted herewith is/are the following in the above-identified application:

(X) Response/Amendment   ( ) Petition to extend time to respond
( ) New fee as calculated below   ( ) Supplemental Declaration
( ) No additional fee   (Address envelope to "Mail Stop Non-Fee Amendment")
( ) Other: _____ (fee $_____)

CLAIMS AS AMENDED BY OTHER THAN A SMALL ENTITY						
(1) FOR	(2) CLAIMS REMAINING AFTER AMENDMENT	(3) NUMBER EXTRA	(4) HIGHEST NUMBER PREVIOUSLY PAID FOR	(5) PRESENT EXTRA	(6) RATE	(7) ADDITIONAL FEES
TOTAL CLAIMS		MINUS		= 0	X $18	$ 0
INDEP. CLAIMS		MINUS		= 0	X $86	$ 0
[ ] FIRST PRESENTATION OF A MULTIPLE DEPENDENT CLAIM					+ $290	$ 0
EXTENSION FEE	1ST MONTH $110.00	2ND MONTH $420.00	3RD MONTH $950.00	4TH MONTH $1480.00		$ 0
					OTHER FEES	$
					TOTAL ADDITIONAL FEE FOR THIS AMENDMENT	$ 0

Charge $___0___ to Deposit Account 08-2025. At any time during the pendency of this application, please charge any fees required or credit any overpayment to Deposit Account 08-2025 pursuant to 37 CFR 1.25. Additionally please charge any fees to Deposit Account 08-2025 under 37 CFR 1.16 through 1.21 inclusive, and any other sections in Title 37 of the Code of Federal Regulations that may regulate fees. A duplicate copy of this sheet is enclosed.

Date: _November 13, 2003_

Respectfully submitted,
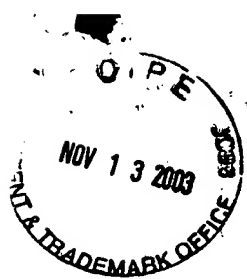
Ullas GARGI et al

By _[signature]_

Patrick C. Keane

Attorney/Agent for Applicant(s)
Reg. No. 32,858

Date: **Nov. 13, 2003**

I hereby certify that this document is being filed by personal delivery to the Customer Service Window, Crystal Plaza 2, 2011 South Clark Place, Arlington Virginia, of the United States Patent & Trademark Office on the date indicated above.

By: _[signature] Reg No 32,858_
(Attorney Signature and Reg. No.)

Telephone No.: (703) 838-6522

Patent
Attorney's Docket No. <u>10006286-1</u>

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of)
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Ullas Gargi et al)
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Application No.: 09/904,627)
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Filed: July 16, 2001)
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For: HIERARCHICAL IMAGE)
     FEATURE-BASED)
     VISUALIZATION)
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)
)
	Group Art Unit: 2672
	
	Examiner: Jin Cheng Wang
	
	Confirmation No.: 2970

<u>REQUEST FOR RECONSIDERATION</u>

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In response to the Office Action mailed August 18, 2003, reconsideration and allowance of the present application are respectfully requested. Claims 1-20 remain pending in the application.

In numbered paragraph 3 on page 2 of the Office Action, claims 1-8, 11-14 and 16-19 are rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,584,221 (Moghaddam et al). In paragraph number 7, claims 9-10 and 20 are rejected under 35 U.S.C. §103(a) as being unpatentable over the Moghaddam patent in combination with U.S. Patent No. 6,121,969 (Jain). In numbered paragraph 9, claim 15 is rejected under 35 U.S.C. §103(a) as being unpatentable over the Moghaddam patent in combination

with U.S. Patent No. 5,528,259 (Bates). These rejections are respectfully traversed, as the documents relied upon by the Examiner fail to teach or suggest Applicants' invention as set forth in independent claims 1 and 17.

The present invention is directed to a multimedia database and classification system which can, for example, provide for automatic classification and retrieval of multimedia files based on features of the multimedia files. Figure 1 shows an exemplary method for visualizing and retrieving data files in accordance with an exemplary embodiment of the present invention. In step 110, a plurality of images representing data files on a display device are displayed using a first (i.e., coarse) distance metric. The distance metric represents a distance **between each data file**. In step 120, a portion of the images can be redisplayed on the display device using a refined distance metric. As described on specification page 6 beginning with line 4, the distance metric can be refined at each of plural redisplays until a desired data file is found or a maximum refined distance metric is reached. In step 140, a desired data file can be retrieved, and/or can be marked or selected.

Figures 2A-2E show a graphical representation of displays generated in accordance with exemplary embodiments, where each portion of the images redisplayed can be graphically selected by a user. Figure 2A is a screen capture of an exemplary display showing a first level of images representing data files on a two-dimensional display. A first, coarse, distance metric can be calculated, and allows the user to receive useful information about the organization of images on the display. Based on perceived

properties of a desired image, a user can select an area 202 of the screen where a desired image most likely resides. Figure 2B shows a portion of images redisplayed as selected by area 202. Here the distance metric has been recalculated using more of the image information than was used in the first distance calculation. As described on specification page 9, the reclustering and redisplaying of selected images is more than merely a zoom function.

The redisplayed process can be repeated, as represented by Figures 2C and 2D. Distance metrics between images are again recalculated using more image feature data than previously used with respect to Figure 2B. Following the redisplay based on recalculated distance metrics, a desired data file (e.g., image 240) is identifiable and can be selected and retrieved as shown in Figure 2E. Figure 3 shows another exemplary method which can be implemented in accordance with the present invention, and Figure 4 shows a flowchart for performing a coarse to fine distance calculation.

The foregoing features are broadly encompassed by independent claims 1 and 17. Exemplary embodiments of the present invention display images using a first distance metric **between each data file**, and provide for redisplaying a portion of the images using a refined distance metric in a manner which constitutes more than merely a zoom feature. Claim 1 is directed to a method of visualizing and retrieving a data file from a second data file. The claim 1 method includes a step of displaying a plurality of images representing corresponding data files on a display device using a first distance metric **between each data file**. Claim 1 also recites also redisplaying a portion of the images on the display

device using a refined distance method. Claim 17 is directed to a method of interactively retrieving a data file from a set of data files in real time, and includes features similar to those mentioned with respect to claim 1.

The foregoing features are neither taught nor suggested by the Moghaddam patent, considered individually or in combination with Jain or Bates patents in the manner suggested by the Examiner.

The primary reference relied upon by the Examiner, the Moghaddam patent, is at best, an image retrieval method which provides a zoom feature. The method described by Moghaddam separates and filters images to extract color and texture features. These features for each image are partitioned in a plurality of blocks. A joint distribution of the color features and a joint distribution of the texture features are estimated for each block, and stored in a database with each image to enable retrieval of images by comparing the estimated joint distribution. Column 2, lines 59-67 of the Moghaddam patent describe using color and texture features as key image components for image retrieval. Based on the color/texture features, images are retrieved in response to a user query and are presumably displayed in rank order. That is, retrieved images are presumably displayed based on their proximity to the user's query, as there is no teaching or suggestion of displaying images based on a distance metric between each data file. Images in the Moghaddam database are displayed with respect to a particular query, and not with respect to one another. Accordingly, the response to any request to redisplay a portion of the

original set of displayed images would be based on the original distances to the original

query, and not on a refined distance metric.

This distinction can be characterized by way of example. With exemplary

embodiments of the present invention, when a particular image is removed from the set of

images to be displayed, all of the distance metrics between images will change resulting in

relocation of the remaining images on the display. In contrast, when is a subset of images

displayed in response to a query is selected for redisplay, the relationship among the

images in the redisplay will remain the same as that of the original display. This is

because in the Moghaddam system, all images are displayed with respect to an initial

query, and not with respect to distance metrics between each data file to be displayed. The

Moghaddam redisplay function is simply directed to a zoom feature.

As such, claims 1 and 17 are allowable over the Moghaddam patent. The

remaining patents to Jain and Bates fail to overcome the deficiencies of the Moghaddam

patent, such that claims 1 and 17 are considered allowable. The Jain patent is directed to

navigating to re-rank images. This patent is not directed to using a distance metric

between data files, or to redisplaying a portion of the images on the display device using a

refined distance metric.

The Bates patent is directed to visualization of images, and is not directed to

computing any distance metric whatsoever. As such, claims 1 and 17 are considered

allowable over the Moghaddam patent even when this patent is considered in combination

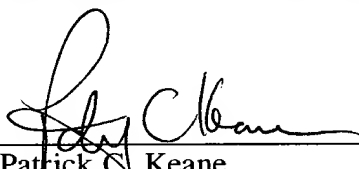with the Jain and Bates patent in the manner suggested by the Examiner.

Because independent claims 1 and 17 are considered allowable, all of the remaining

claims 2-16 and 18-20 are considered allowable.

All rejections and objections raised in the Office Action having been addressed, it is

respectfully submitted that the present application is in condition for allowance and a

Notice of Allowance is respectfully solicited.

Respectfully submitted,

BURNS, DOANE, SWECKER & MATHIS, L.L.P.

Date: Nov 13, 2003   By: _____
                                Patrick C. Keane
                                Registration No. 32,858

P.O. Box 1404
Alexandria, Virginia 22313-1404
(703) 836-6620